tnc25
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BRIGHTER TOGETHER

Tales of FEII

Sunet's Journey through Function, Efficiency, Innovation & Integration

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SUNET

Co-funded by the European Union

GÉANT

Sunet is the Swedish University Computer Network

Sunet – The Swedish National Research and Education Network

- Founded in the 1980s – Paved the way for the establishment of the general internet in Sweden
- Experience since 1985
- Nation-wide high-speed computer network – 9 300 km of fibre
- National academic identity infrastructure
- 99.999% Network availability
- 24/7 Operations Centre
- Services for Swedish higher education institutions, public authorities, museums, and other public organizations
- Part of Vetenskapsråded (VR) – The Swedish Research Council

FEII & RFC 2119 Overview

- **FEII in Context:** Off-the-shelf solutions + Mandatory & Optional Requirements
- **RFC 2119:** Defining “MUST”/”MUST NOT”, “SHOULD”/”SHOULD NOT” and “MAY” for clarity and consistency
- **Why it matters:** Precise requirement levels streamline communication and expectations

Function – Baseline “MUSTs” - Off-the-Shelf Requirements

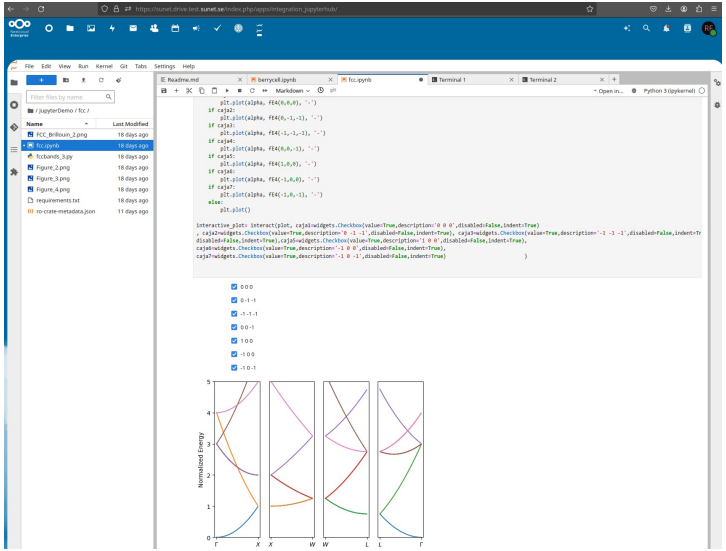
- **Core Services:** Off-the-shelf solutions
- **RFC 2119:** “MUST” requirements implement foundational operations
- **Reduced Complexity:** Vendor documentation and support

Efficiency – Non-functional “SHOULDs”

- **Scaling and Performance:** The system SHOULD be able to handle massive amounts of data
- **Minimal Human Interaction:** Automation is a strong SHOULD for large-scale ops
- **KPIs and non-functional requirements:** Throughput, Latency, Reliability

Innovation – “MAY” and experimental features

- **Vendor Gaps:** Some advanced features MAY not exist initially
- **PoC:** A pilot feature for specialised use case
- **Risk Management:** Begin with “MAY”, elevate to “SHOULD” or “MUST” if successful



Integration – Compliance & Cross-Module Consistency

- **Holistic Ecosystem:** Modules MUST integrate seamlessly
- **API Uniformity:** Modules SHOULD use standard protocols
- **Policy Enforcement:** Security & compliance checks MUST NOT conflict with technical implementation (and vice versa)

Best Practices

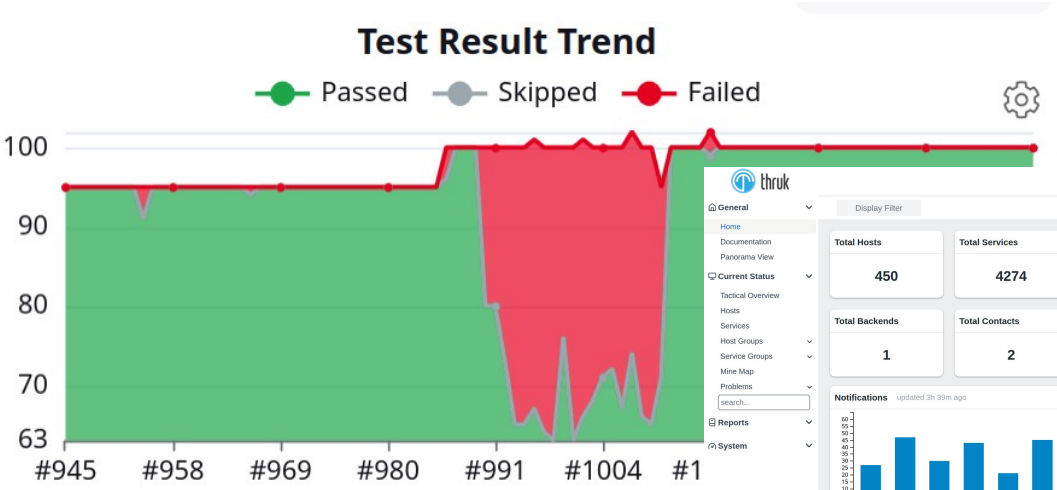
- Use “MUST” for critical funcationality
- Apply “SHOULD” for recommended scalability and performance
- Reserve “MAY” for experimental/optional expansions
- Continuously update requirement levels as features mature
- **Map RFC 2119 to FEII:** A powerful combination for clarity and structure

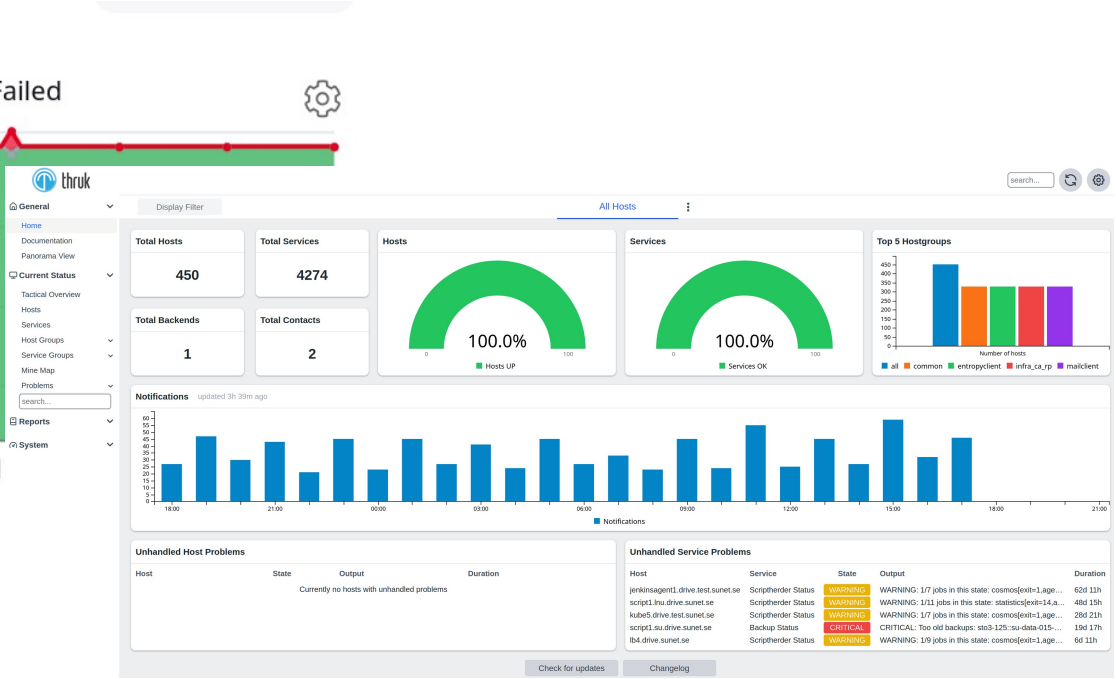
Sunet Tales of FEII

A tale of (many) functions: Nextcloud v24 → v25 → v26 → v27 → v28 → v29 → v30 → v31...

- **RFC 2119:** Basic EFSS functionality MUST continue to work after upgrades
- **Problem:** New versions introduce features and potentially regressions
- **Resolution:** Monitoring and continuous testing at a global scale

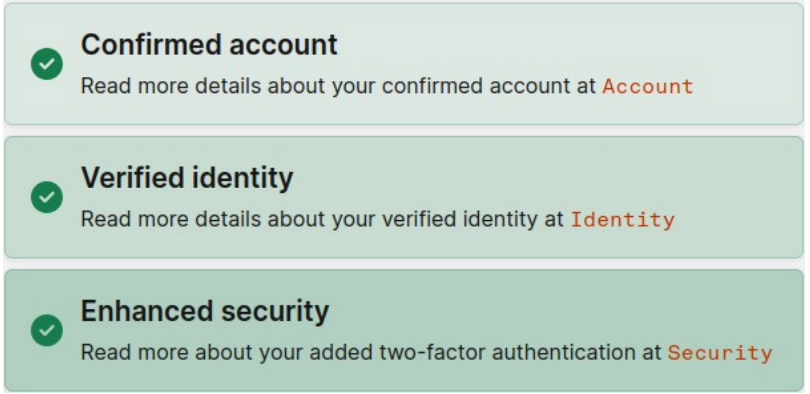
A tale of (many) functions: Nextcloud v24 → v25 → v26 → v27 → v28 → v29 → v30 → v31...





Tale of Innovation: eduID Connect

- **Problem:** Operating Identity providers with identity assurance and multifactor authentication can be challenging
- **Resolution:** Extend tried and tested solution (eduID.se)
- **Effect:** Security & Compliance

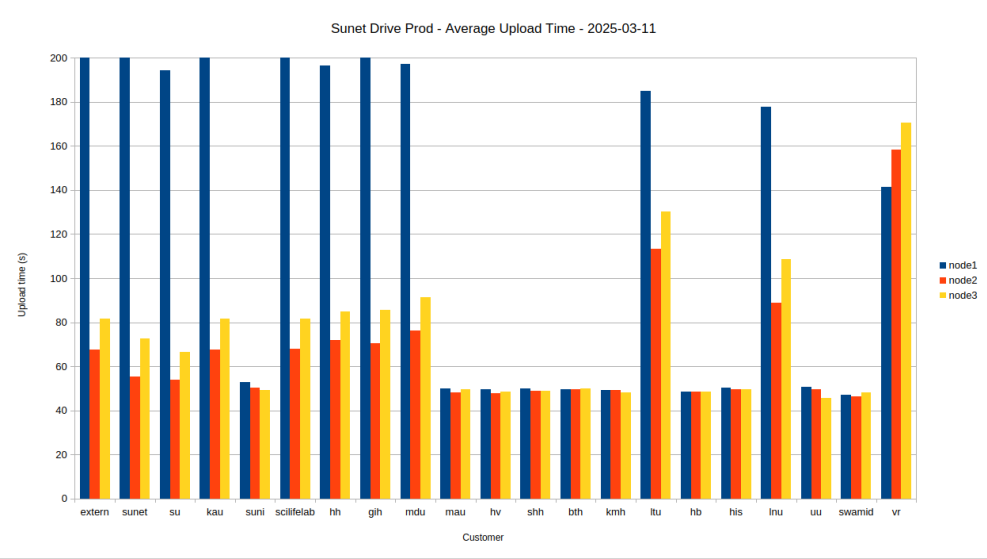


Tale Efficiency: Multi Data-Centre Deployment

- **Redundancy:** Three data centres SHOULD ensure seamlessly distributed load
- **Observation:** One data centre hindered performance in ~1/3 of uses
- **Action:** MUST diagnose network latency and client routing

Tale Efficiency: Multi Data-Centre Deployment

- Best performance for non-clustered nodes
- Good performance for node2/node3 of clustered nodes
- Bad performance for node1 in dco/kalix
- The **‘good enough’** solution was chosen

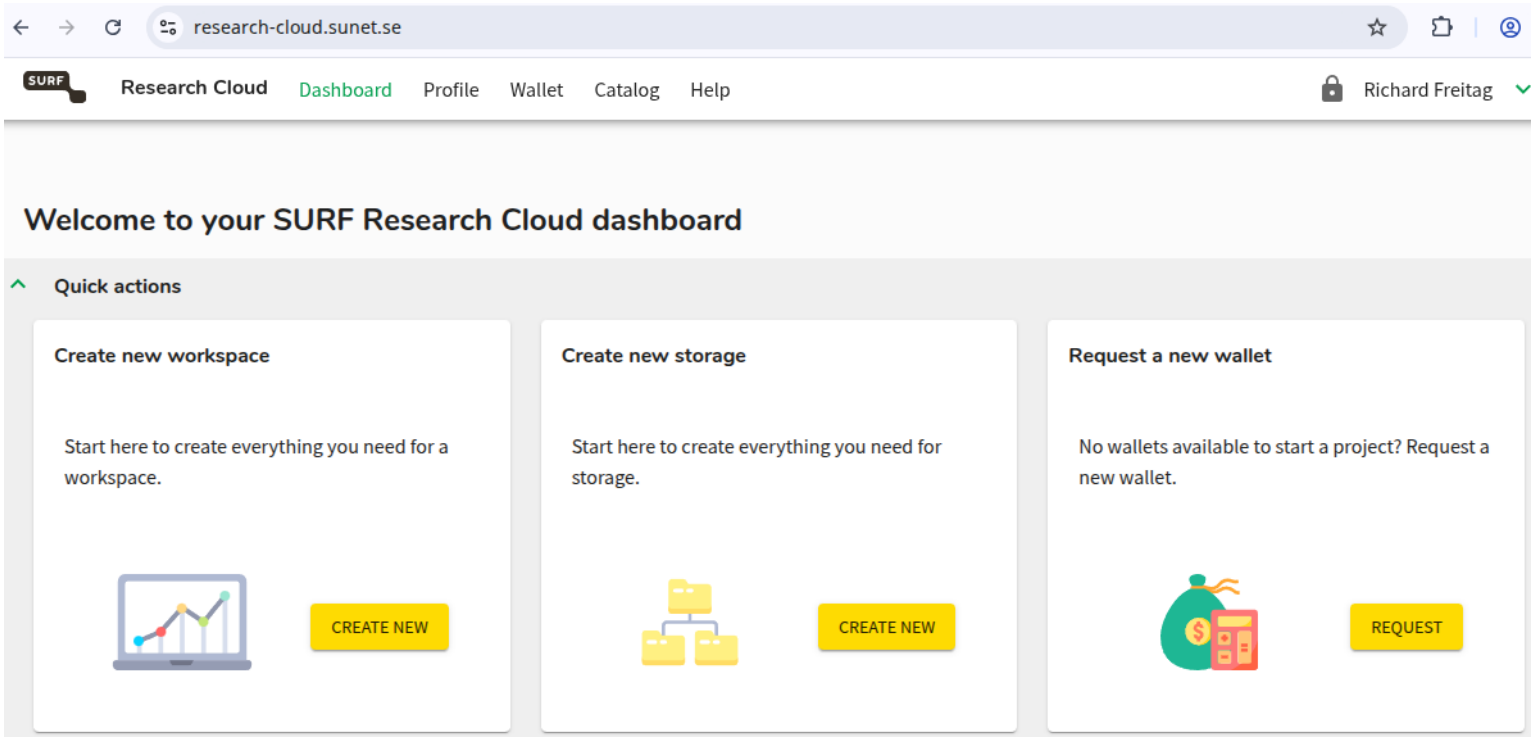


Tale of Integration: Surf/Sunet Research Cloud (PoC)

- **Problem:** Scientists require easy acces to compliant compute-resources
- **Resolution:** Adapt Surf Research Cloud to provision resources in Swedish Data Centres
- **Effect:** Solution that is secure, compliant, and cloud-agnostic

Did you miss the BoF on Wednesday?

Tale of Integration: Surf/Sunet Research Cloud



Is this all new?

Douglas Adams – Rules that describe our reactions to technology

1. Anything that is **in the world when you're born** is normal and ordinary and is just a natural part of the way the world works.
2. Anything that's **invented between when you're fifteen and thirty-five** is new and exciting and revolutionary and you can probably get a career in it.
3. Anything **invented after you're thirty-five** is against the natural order of things.

Thank you

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